



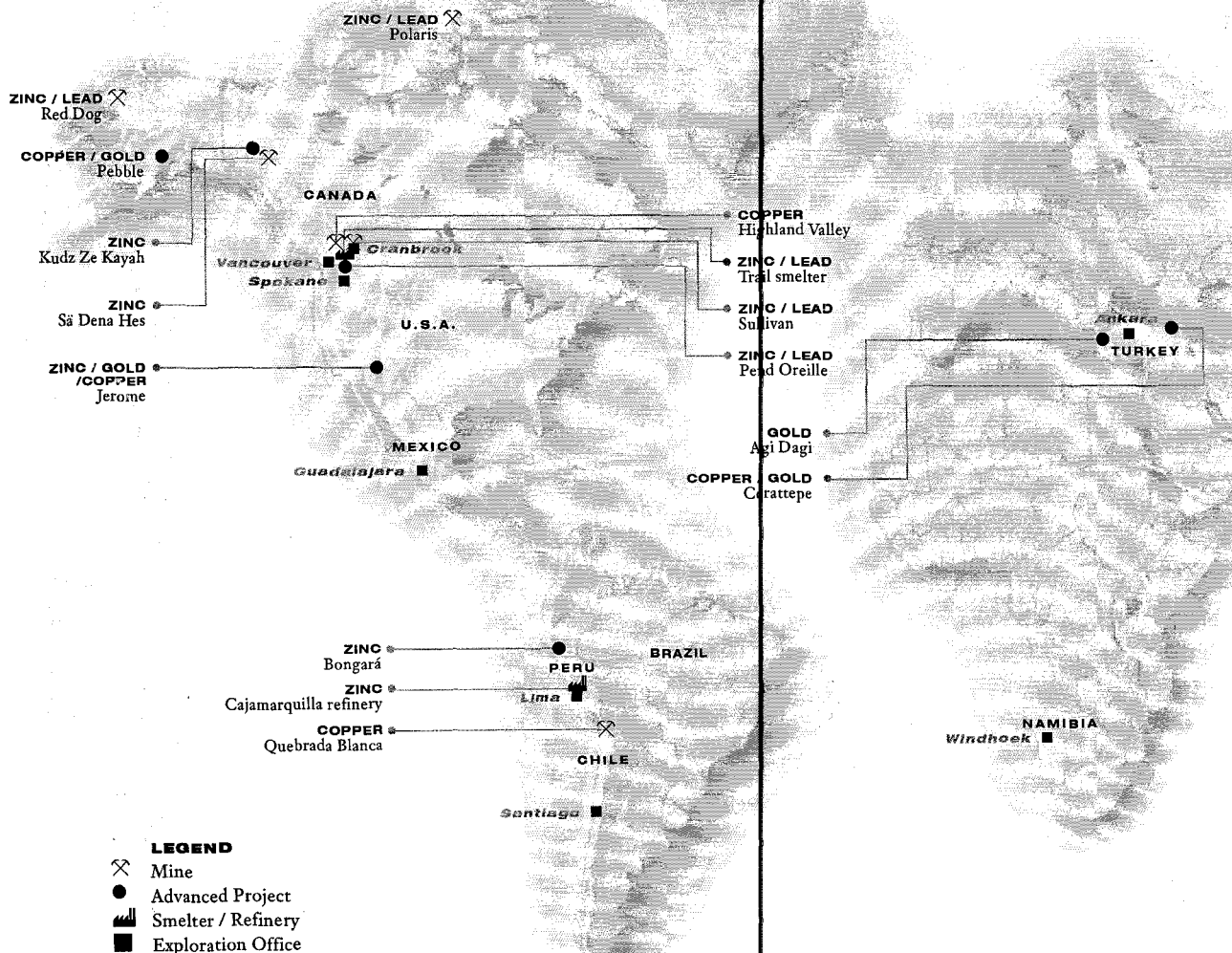
# Solid Progress in a Challenging Year

**Cominco**

ANNUAL REPORT

1998

## WORLDWIDE OPERATIONS



## OWNERSHIP OF OPERATIONS

**CAJAMARQUILLA** is owned 82 percent by Cominco Ltd., 17 percent by Marubeni Corporation and 1 percent by the refinery's employees.

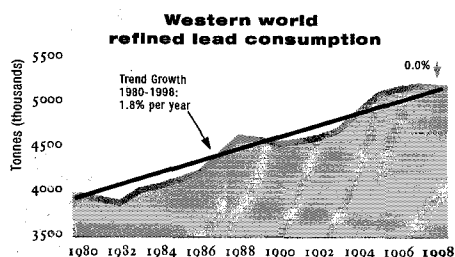
**HIGHLAND VALLEY COPPER** is owned by a partnership of Cominco Ltd. (50 percent), Rio Algom Limited (33.6 percent), Teck Corporation (13.9 percent including 2.5 percent from Highmont) and Highmont Mining Company (2.5 percent, excluding Teck's 2.5 percent).

**POLARIS** is a joint venture owned by Cominco Ltd. (77.5 percent) and Teck Corporation (22.5 percent). Cominco is the operator of the joint venture. Rio Algom Limited holds a 25 percent royalty interest in the annual net proceeds of production from the mine.

**QUEBRADA BLANCA** is operated by Compañía Minera Quebrada Blanca S.A., of which Cominco has a 47.25 percent interest. Teck Corporation has a 29.25 percent interest and Inversiones Mineras S.A. has a 13.5 percent interest. Empresa Nacional de Minería holds a 10 percent carried interest.

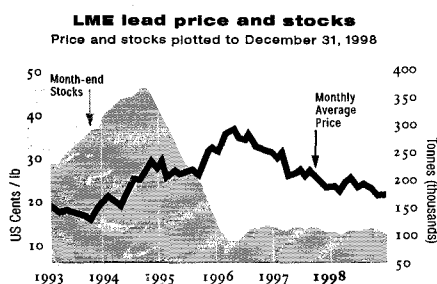
**RED DOG** is leased from the Northwest Alaska Native Association (NANA) and operates under a royalty lease arrangement – see Note 13(a), page 51.

**SULLIVAN AND TRAIL OPERATIONS** are 100 percent owned by Cominco Ltd.



consumption, only slightly above the normal 4 weeks.

The LME price of lead averaged us 24 cents per pound in 1998, down from the 1997 level of us 28 cents per pound.



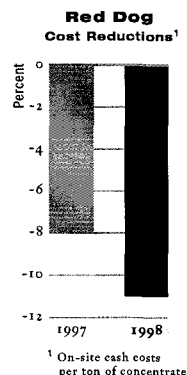
## ZINC OPERATIONS

### Red Dog Mine

One of Cominco's most important assets is the Red Dog mine (zinc-lead) in northwest Alaska, which is operated by the company under a long-term lease agreement with NANA (Northwest Alaska Native Association). Currently the largest zinc mine in the world, Red Dog is almost double the size of its nearest competitor in terms of ore reserves and resources. The mine currently accounts for 9 percent of the Western world's zinc production and is a major long-term supplier of zinc concentrate to Cominco's metallurgical facility in Trail, B.C.

The culmination of the us\$200 million Production Rate Increase (PRI) project in September 1998 marked yet another milestone at Red Dog. Initiated in early 1996, the project was completed on time and on budget. In addition to boosting

the mine's production capacity from 600,000 tonnes of zinc concentrate to 900,000 tonnes a year, with both recoveries and concentrate grades meeting or exceeding expectations, the PRI project reduced cash costs by 11 percent, placing the mine in a very competitive position. The year also saw record zinc concentrate shipments of 760,000 tonnes during the summer/fall shipping season.



RED DOG			
	1998	1997	
ORE MILLED (tonnes)	2,497,100	1,929,000	
<b>Zinc</b>			
Average ore grade	21.4%	20.3%	
Concentrate (tonnes)	798,800	609,600	
Average concentrate grade	55.7%	55.2%	
Average mill recovery	85%	86%	
<b>Lead</b>			
Average ore grade	5.2%	5.2%	
Concentrate (tonnes)	122,700	113,300	
Average concentrate grade	59.3%	56.1%	
Average mill recovery	57%	62%	
<b>Silver</b>			
Average ore grade (g/tonne)	90.0	98.3	
Average ore grade (oz/ton)	2.62	2.87	
Average mill recovery	67%	70%	
No. of employees at year-end	367	355	
<b>ORE RESERVES</b>			
	1998		1997
	Proven & Probable	Possible	Proven & Probable
Million tonnes	47.6	72.9	50.6
Zinc %	19.2	13.6	19.0
Lead %	5.2	3.7	5.2
Silver g/tonne	99.0	65.0	99.0
<b>RESOURCES</b>			
	1998		1997
	Indicated	Inferred	Indicated
Million tonnes	9.6	13.0	9.6
Zinc %	17.8	13.0	17.8
Lead %	5.5	4.0	5.5
Silver g/tonne	117.0	90.0	117.0



*Cominco and the Alaska Development Authority are examining ways to expand shipping capacity.*

Other construction completed on-site at Red Dog included the Lead Pre-flotation Project in which additional lead flotation cells were installed in an expanded mill building to improve concentrate quality. This project was also completed on schedule and under budget. As a result, lead concentrate grade rose to 59 percent in 1998, up from 56 percent in 1997. Lead concentrate shipments were 125,000 tonnes.

The summer exploration drilling program at Red Dog identified a potential zone lying below Paalaaq to the north. The Paalaaq deposit is currently estimated to contain an inferred resource of 13 million tonnes grading 15 percent zinc, although the boundaries of the zone have not yet been defined on the north and west sides.

With an eye to the future, the company is working with the Alaska Development Authority to examine ways to expand the shipping capacity at the nearby port and to increase utilization of the local DeLong

Mountain Transportation System.

Process improvements continue to be realized in the critical area of environmental performance. For example, in 1998 Trail's Cominco Research group was instrumental in developing a water treatment method which reduces cadmium concentrations in treated water at Red Dog to unparalleled low levels.

The Red Dog mine is currently renewing its system of environmental management to ensure compatibility with the ISO 14000 standard of the International Standards Organization.

The mine contributed \$60 million to Cominco's operating profit in 1998 compared with \$102 million in 1997, with the decrease due to the impact of the lower zinc and lead prices in 1998.

#### **Sullivan Mine**

Sullivan operations (zinc-lead-silver) at Kimberley, B.C. responded to below-plan

**Red Dog mine's  
production capacity  
has increased from  
600,000 to 900,000  
tonnes per year.**



ore grades by mining and milling 117 percent of planned ore production. This resulted in more than 97 percent of planned zinc concentrate production.

The amount of lead concentrate produced in 1998 was higher than in 1997 due to a higher amount of ore milled at close-to-plan lead ore grade. Mine development, drilling, crushing and conveying activities continued at record levels throughout the year, allowing the mine to achieve production rates of 98,000 tonnes per year of contained zinc.

Compared with other sources, concentrate from the Sullivan mine enjoys a significant transportation cost advantage when shipped to Cominco's metallurgical

complex at Trail, B.C. For this reason, the company has implemented a plan to mine additional ore during the last years of the mine's operation.

Anticipating the closure of Sullivan and the need to replace its production capacity, Cominco is in the permitting stage at the Pend Oreille mine at Metalline Falls in Washington State.

The recipient of the 1997 British Columbia Mine Reclamation Award, Sullivan mine's ongoing \$63 million reclamation program was 48 percent complete at year-end, with expenditures to date totalling \$30 million. An important part of this program is the control of acid rock drainage through extensive reclamation, collection and treatment programs. The Sullivan Public Liaison Committee, which includes community and government representation, continues to play an important role in mine closure planning.

Sullivan incurred an operating loss of \$16 million in 1998 compared with a profit in 1997 of \$13 million. The loss this year was due to lower metal prices, lower ore grades and higher mine development costs.

#### Polaris Mine

In early 1998, development work to allow mining of one of the last remaining parts of the orebody, the abutment pillar, was completed at Cominco's Polaris mine (zinc-lead) in Canada's Northwest Territories. The first stages of the abutment pillar were mined at better than expected recovery rates utilizing cemented rockfill for ground support.

Production of zinc and lead concentrates at the Polaris mine increased by 15 and 34 percent respectively when compared with 1997 production. At the same time, the mine decreased its operating cost per tonne of concentrate by 17 percent from the cost in 1997.

Exploration continued at Polaris and the discovery of ore grade mineralization in

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#### SULLIVAN

	1998	1997
ORE MILLED (tonnes)	1,915,700	1,580,300
Zinc		
Average ore grade	6.0%	7.2%
Concentrate (tonnes)	186,900	192,800
Average concentrate grade	52.5%	52.3%
Recovery	86%	89%

#### Lead

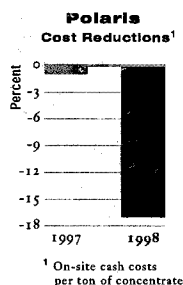
Average ore grade	3.5%	3.7%
Concentrate (tonnes)	75,300	64,000
Average concentrate grade	64.9%	65.3%
Recovery	72%	71%

#### Silver

Average ore grade (g/tonne)	22	18
Average ore grade (oz/tun)	0.65	0.52

No. of employees at year-end	638	639
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ORE RESERVES	1998	1997
	Proven & Probable	Proven & Probable
Million tonnes	6.1	7.1
Zinc %	6.6	7.2
Lead %	3.7	4.0
Silver g/tonne	20.0	23.0



two drill holes outside the limits of current reserves opened up potential for expansion of the South Keel zone. Development of the Closure and Reclamation Plan also continued.

On the labour front, negotiations for union certification that began in 1997 have been satisfactorily completed and a contract, which will extend to the end of 2001, was ratified.

Polaris contributed \$23 million to Cominco's operating profit in 1998, compared with \$28 million in 1997, with the reduction in operating profit mainly due to lower metal prices.

When Nunavut comes into existence on April 1, 1999, its territory will encompass the Polaris mine.

POLARIS <sup>1</sup>		
	1998	1997
ORE MILLED (tonnes)	1,030,900	1,043,900
<b>Zinc</b>		
Average ore grade	14.0%	12.3%
Concentrate (tonnes)	225,900	196,900
Average concentrate grade	62%	63%
Average mill recovery	97%	96%
<b>Lead</b>		
Average ore grade	4.0%	2.9%
Concentrate (tonnes)	48,000	35,700
Average concentrate grade	78.2%	77.3%
Average mill recovery	91%	91%
No. of employees at year-end	239	241
<b>ORE RESERVES</b>		
	1998	1997
	Proven & Probable	Proven & Probable
Million tonnes	2.9	3.5
Zinc %	12.8	13.2
Lead %	3.3	3.6

<sup>1</sup> Cominco's interest is 77.5 percent.

### Trail Smelting and Refining Operations

One of the world's largest integrated refined zinc and lead production facilities, Cominco's metallurgical complex at Trail in southeastern B.C. produces about 5 percent of the Western world's refined zinc and 2 percent of its refined lead. Process streams move between the zinc and lead plants to maximize the recovery of the principal metals as well as other valuable metals such as silver, gold, indium, germanium, bismuth and copper. Trail also produces ammonium sulphate fertilizers and other sulphur products.

The highlight of the year at Trail was the achievement, in December, of full design rates on both the new Kivcet lead smelter and the slag fuming furnace. During the first half of 1998, Kivcet's performance was hindered by the failure of the water cooling jackets and other mechanical and process problems. A maintenance shutdown was taken in July during which many of the problems were resolved. The changes made during the shutdown, coupled with process improvements made thereafter, resulted in Kivcet achieving throughput of 99 percent by December. These running rates have continued into 1999. Cominco Research and the operating, trades and technical groups all played key roles in the success of this endeavour.

In the first part of the year, the Zinc Operations were constrained due to insufficient recycling of zinc, germanium- and indium-bearing material from the slag fuming furnace in the lead smelter. However, outstanding performance by the Zinc Pressure Leaching Plant and the Roasters helped maintain zinc production rates. By the third quarter Lead Operations had overcome key production problems allowing them to send more material from the slag fuming plant to the zinc plants for processing. With these improvements, in the fourth quarter Trail Operations

**TRAIL**

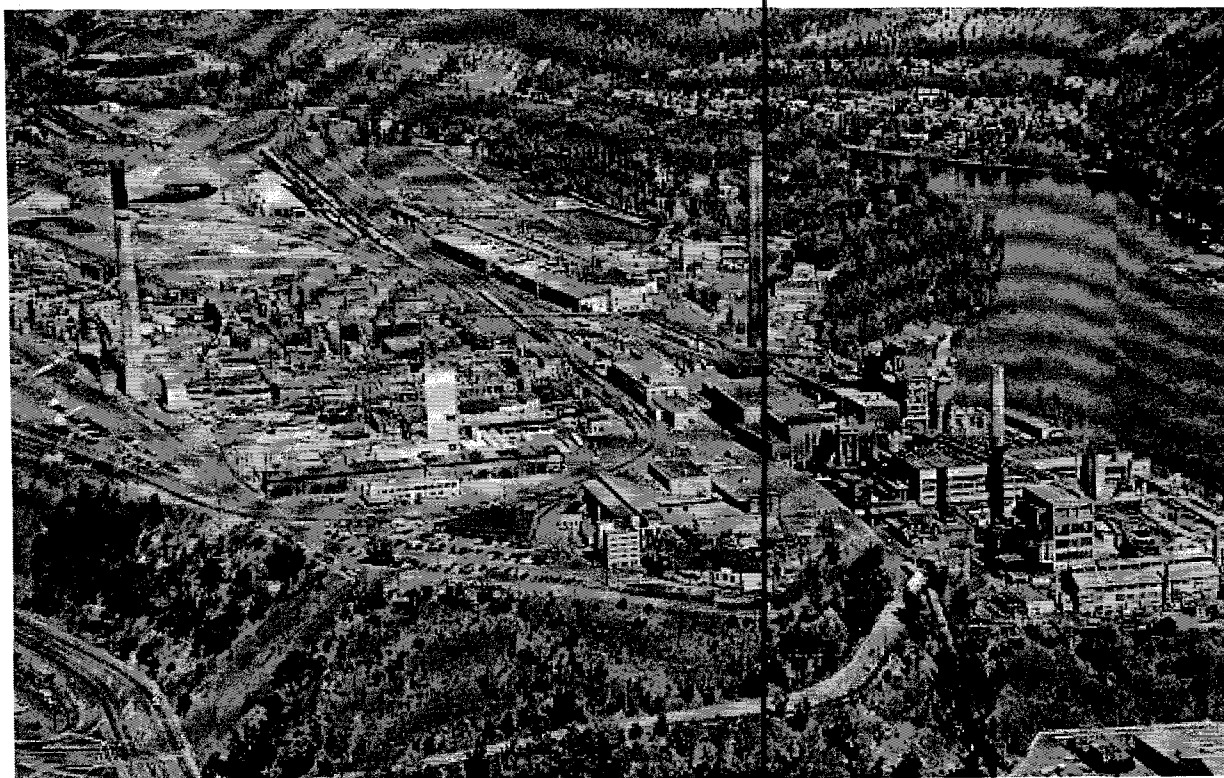
	1998	1997
<b>Zinc (tonnes)</b>	274,300	256,900
<b>Lead (tonnes)</b>	63,900	71,900
<b>Silver (kilograms)</b>	379,900	300,500
(ounces)	12,215,000	9,662,000
<b>Gold (kilograms)</b>	2,662	2,177
(ounces)	85,600	70,000
<b>Ammonium Sulphate (tonnes)</b>	271,600	264,100
No. of employees at year-end	1,813	1,843

achieved the highest quarterly production of zinc metal this decade at 70,705 tonnes. In addition, Trail produced 12,215,000 ounces of silver during 1998, the highest level in more than 20 years.

In 1998, the slag disposal system associated with the old lead smelter, which was located on a prominent downtown hillside, was demolished and the entire bank was terraced and landscaped.

State-of-the-art refining and smelting technology and environmental programs at the Trail facility have resulted in dramatic improvements in air and water quality, greening of the valley and increased community input into the setting of mutually beneficial environmental objectives. Receipt of a prestigious "Ethics in Action" award this year for carefully balancing the needs of employees, shareholders and the local community clearly indicates the success of this partnership approach. The company is particularly proud to have been nominated for this award by its union, Local 480 of the United Steelworkers of America, the City of Trail and the Trail Community Lead Task Force.

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and the slag  
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*Cominco's metallurgical complex at Trail, B.C. is one of the world's largest integrated refined zinc and lead production facilities.*

# **Production and Sales Statistics<sup>1</sup>**

<i>For the Years Ended December 31</i>		1998		1997	
		Sales	Production	Sales	Production
<b>REFINED METALS</b>					
<b>Zinc</b>					
Trail	tonnes	277,500	274,300	254,500	256,900
Cajamarquilla	tonnes	108,200	113,300	103,200	103,300
<b>Total</b>		<b>385,700</b>	<b>387,600</b>	<b>357,700</b>	<b>360,200</b>
<b>Lead</b>					
Trail	tonnes	62,300	63,900	81,700	71,900
<b>Copper</b>					
Quebrada Blanca (47.25%)	tonnes	34,200	33,600	31,500	31,600
<b>Silver</b>					
Trail	ounces	13,191,700	12,215,000	8,199,400	9,662,000
Highland Valley Copper (50%) <sup>2</sup>	ounces	1,025,700	1,046,400	964,000	964,000
Other	ounces	—	—	1,100	100
<b>Total</b>		<b>14,217,400</b>	<b>13,261,400</b>	<b>9,164,500</b>	<b>10,626,100</b>
<b>Gold</b>					
Trail	ounces	89,400	85,600	70,800	70,000
Highland Valley Copper (50%) <sup>2</sup>	ounces	7,800	7,000	6,300	6,300
Other	ounces	—	—	200	200
<b>Total</b>		<b>97,200</b>	<b>92,600</b>	<b>77,300</b>	<b>76,500</b>
<b>CONCENTRATES</b>					
<b>Zinc</b>					
Red Dog <sup>3</sup>	tonnes	765,400	798,800	620,500	609,600
Sullivan <sup>3</sup>	tonnes	187,100	186,900	193,200	192,800
Polaris (77.5%)	tonnes	176,400	175,100	156,000	152,700
<b>Total</b>		<b>1,128,900</b>	<b>1,160,800</b>	<b>969,700</b>	<b>955,100</b>
<b>Lead</b>					
Red Dog	tonnes	123,800	122,700	125,800	113,300
Sullivan <sup>3</sup>	tonnes	35,200	75,300	57,100	64,000
Polaris (77.5%)	tonnes	29,400	37,200	26,400	27,700
<b>Total</b>		<b>188,400</b>	<b>235,200</b>	<b>209,300</b>	<b>205,000</b>
<b>Copper</b>					
Highland Valley Copper (50%) <sup>2</sup>	tonnes	87,100	86,200	81,200	81,200
<b>Molybdenum</b>					
Highland Valley Copper (50%) <sup>2</sup>	tonnes	1,200	1,200	1,000	1,000

<sup>1</sup> Production and sale statistics are Cominco's proportionate share.

<sup>2</sup> Metal contained in concentrate.

<sup>3</sup> Approximately 30 percent of Red Dog's zinc concentrate and all of Sullivan's zinc and lead concentrates are sold to and processed at Trail.